

## COMPOSITIONS FOR IMPROVED RECOVERY OF METALS

### ABSTRACT OF THE INVENTION

Liquor compositions for the extraction of metallic elements from solid and liquid metal-contaminated starting material such as mineral ores, recyclable wastes, contaminated soils, engraving solutions, metal finishing solutions, battery manufacturing solutions, toxic wastes such as dusts producing through steelmaking processes by effectuating preferably prolonged contacting of such starting material with the liquor to cause the underlying structure of the starting material to be broken down. The contaminated starting materials are more susceptible to metal separation because the released metallic element are readily solubilized in the contacting liquor. Compositions of the contacting liquor comprise caustic silicate solutions containing essentially saturating levels of silica. Once the plurality of metallic elements contained in the starting material have been solubilized, they tend to remain in solution, and then may be routinely extracted and removed using conventional extraction methodologies such as precipitation of insoluble salts, electrowinning, or electrodeposition.